



RaidoCore Series ESP32-C6

RCC6-62

Datasheet-Rev1.0.0



Document version

Version	Time	Description	Remark
Rev. 1.0.0	2026-06-10	Dev-Preview Version	Richard

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1. Overview

The RadioCore series is a quasi-system-level development platform that enables flexible integration of various MCUs and RF modules within an ultra-compact form factor, making it well suited for a wide range of IoT applications.

The **RCC6-62**, a model in this series, is equipped with the Espressif **ESP32-C6** and **SX1262**, supports 2.4 GHz **Wi-Fi**, **BLE** and **LoRa** connectivity.

The RCC6 features a custom pin layout that supports **solder-free** plug-and-play operation, simplifying prototype assembly and module replacement, thereby accelerating development and iteration cycles.

It supports the official **Arduino** framework and is fully compatible with mainstream toolchains including PlatformIO, and ESP-IDF, enabling developers to work in familiar environments and speed up project delivery.

Features

- ❏ Equipped with the ESP32-C6, integrating 2.4GHz Wi-Fi and BLE.
- ❏ Integrated SX1262, supports long-range, low-power LoRa communication.
- ❏ Provides **Arduino development framework**; compatible with mainstream toolchains including ESP-IDF, PlatformIO, and MicPython etc.
- ❏ Compatible with various open-source projects, such as Meshtastic, MeshCore, Home Assistant, etc.
- ❏ Compact form factor with solder-free pins for easy integration.

Application Scenario

- | | |
|---------------------------------|---------------------------------|
| ■ Outdoor mesh networking | ■ Smart agriculture sensing |
| ■ Smart home gateway | ■ Bluetooth indoor positioning |
| ■ Environmental monitoring node | ■ Wireless repeater / relay |
| ■ Wearable device prototyping | ■ Maker education & experiments |
| ■ Industrial data acquisition | ■ Edge computing node |
| ■ Remote meter reading terminal | ■ Multi-protocol converter |

2. Specifications

2.1 Generic Parameters

Table 2.1 General specification

Parameters	Description
MCU	ESP32-C6 (Wi-Fi/BLE)
Interface	Type-C USB; BTB (Learn More); 2 x 10 Pin Headers
Peripherals	3 x SPI ^① , 2 x UART, 2 x I2C, 1xI2S, 7 x ADC1 ^②
Memory	16MB Flash, 16KB LP SRAM, 512KB HP SRAM, 320KB ROM
Temperature	-30~80°C ^③
Power Supply	USB-C: 5V Pin Header: 3V3, 5V, Vbat(3.0-4.2V)
Shell Material	ABS
Dimensions	40.10 x 23.82 x 12.54 mm
Weight	7.2g ^④

① SPI0 and SPI1 are used to drive the Flash. When a LoRa module is installed, SPI2 is utilized for connecting the LoRa module.

② Total 7 ADC pins; only 5 are brought out to external connectors.

③ Plastic housing top and bottom cover rated for -30°C ~ 65°C operating temperature.

④ RF module not included.

3. Pin Description

This section describes the functions of partial pins on the RCC6 module. Refer to the [RCC6 Schematic](#) and the official [ESP32-C6 datasheet](#) for full details.

3.1 Exposed Pins

These pins are routed to the external pin headers of RadioCore. Their functions remain intact regardless of whether an external RF expansion module is soldered onto the board.

- **GPIO**: All pins marked GPIO are usable as general-purpose input/output pins.
- **Serial / SPI / I2C & Other Peripherals**: These peripherals follow the chip's default pin assignments. You may remap these functions to any available GPIO pins via software configuration in your code.
- **ADC / DAC**: These pins are the chip's dedicated analog input and analog output channels.

RCC6

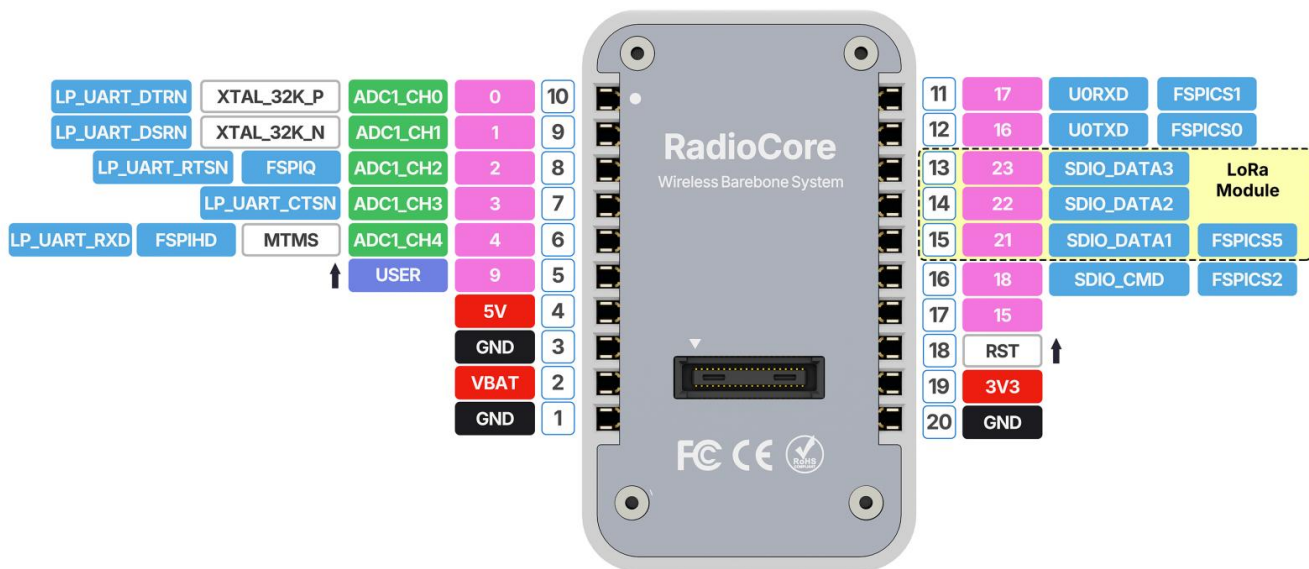


Table3.1: Pins Description

NO.	Name	Type				Function
1	GND	G				Ground
2	VBAT	P				Lithium Battery Power Supply
3	GND	G				Ground
4	5V	P				5V Power Supply
5	0 [®]	I/O/T		RTC	IO_MUX	GPIO0, USER Button
6	17	I/O/T	Analog	RTC	IO_MUX	GPIO17, U1TXD, ADC2_CH6
7	16	I/O/T	Analog	RTC	IO_MUX	GPIO16, U0CTS, ADC2_CH5, XTAL_32K_N
8	6	I/O/T	Analog	RTC	IO_MUX	GPIO6, TOUCH6, ADC1_CH5
9	5	I/O/T	Analog	RTC	IO_MUX	GPIO5, TOUCH5, ADC1_CH4
10	4	I/O/T	Analog	RTC	IO_MUX	GPIO4, TOUCH4, ADC1_CH3
11	44	I/O/T			IO_MUX	U0RXD, GPIO44, CLK_OUT2
12	43	I/O/T			IO_MUX	U0TXD, GPIO43, CLK_OUT1
13	42	I/O/T			IO_MUX	MTMS, GPIO42
14	41	I/O/T			IO_MUX	MTDI, GPIO41, CLK_OUT1
15	40	I/O/T			IO_MUX	MTDO, GPIO40, CLK_OUT2
16	39	I/O/T			IO_MUX	MTCK, GPIO39, CLK_OUT3, SUBSPICS1
17	38	I/O/T			IO_MUX	GPIO38, FSPIWP, SUBSPIWP
18	RST [®]	I				RST Button
19	3V3	P				3.3V Power Supply
20	GND	G				Ground

[®] A 10K pull-up resistor is fitted.

[®] A 10K pull-up resistor is fitted.

3.2 General Pins

This chapter describes the functions of general-purpose pins on the ESP32 main controller, some of which are brought out.

Table3.2: General Pins Description

No.	Name	Type				Function
1	NC					
2	0	I/O/T	Analog	RTC	IO_MUX	GPIO0, ADC1_CH0, XTAL_32K_P, LP_UART_DTRN
3	2	I/O/T	Analog	RTC	IO_MUX	GPIO2, ADC1_CH2, FSPIQ, LP_UART_RTSN
4	7 ^⑦	I/O/T		RTC	IO_MUX	GPIO7, MTDO, FSPID, LP_I2C_SCL
5	1	I/O/T	Analog	RTC	IO_MUX	GPIO1, ADC1_CH1, XTAL_32K_N, LP_UART_DSRN
6	8 ^⑧	I/O/T			IO_MUX	GPIO8
7	GND	G				Ground
8	10 ^⑨	I/O/T			IO_MUX	GPIO10
9	GND	G				Ground
10	11 ^⑩	I/O/T			IO_MUX	GPIO11
11	19	I/O/T			IO_MUX	GPIO19, SDIO_CLK, FSPICS3
12	9 ^⑪	I/O/T			IO_MUX	GPIO9, 9 Button
13	20	I/O/T			IO_MUX	GPIO20, SDIO_DATA0, FSPICS4
14	4	I/O/T	Analog	RTC	IO_MUX	GPIO4, ADC1_CH4, MTMS, FSPIHD, LP_UART_RXD
15	GND	G				Ground
16	3	I/O/T	Analog	RTC	IO_MUX	GPIO3, ADC1_CH3, LP_UART_CTSN
17	GND	G				Ground
18	RST ^⑫	I				CHIP_PU, RST Button
19	5V	P				5V Power Supply
20	13 ^⑬	I/O/T	Analog		IO_MUX	GPIO13, USB_D+
21	5V	P				5V Power Supply
22	12 ^⑭	I/O/T	Analog		IO_MUX	GPIO12, USB_D-
23	5V	P				5V Power Supply

^⑦ This pin is already occupied by the RA62A module.

^⑧ This pin is already occupied by the RA62A module.

^⑨ This pin is already occupied by the RA62A module.

^⑩ This pin is already occupied by the RA62A module.

^⑪ A 10K pull-up resistor is fitted.

^⑫ A 10K pull-up resistor is fitted.

^⑬ A 22R series resistor is placed on the USB_D+ pin.

^⑭ A 22R series resistor is placed on the USB_D- pin.

24	21 ¹⁵	I/O/T			IO_MUX	GPIO21, SDIO_DATA1, FSPICS5
25	5V	P				5V Power Supply
26	15	I/O/T			IO_MUX	GPIO15
27	16 ¹⁶	I/O/T			IO_MUX	GPIO16, U0TXD, FSPICS0
28	18	I/O/T			IO_MUX	GPIO18, SDIO_CMD, FSPICS2
29	17	I/O/T			IO_MUX	GPIO17, U0RXD, FSPICS1
30	GND	G				Ground
31	23 ¹⁷	I/O/T			IO_MUX	GPIO23, SDIO_DATA3
32	GND	G				Ground
33	22 ¹⁸	I/O/T			IO_MUX	GPIO22, SDIO_DATA2
34	VBAT	P				Lithium Battery Power Supply
35	3V3	P				3.3V Power Supply
36	VBAT	P				Lithium Battery Power Supply
37	3V3	P				3.3V Power Supply
38	VBAT	P				Lithium Battery Power Supply
39	3V3	P				3.3V Power Supply
40	VBAT	P				Lithium Battery Power Supply

3.3 LoRa Pin Descriptions

RC3262 is equipped with the HT-RA62A LoRa module. Refer to the schematic for full details: [RCC6-LoRa](#)

SCHEMATIC.

Table3.3: LoRa Pins Description

NO.	Name	LoRa Function
1	GPIO23	SPI_CS
2	GPIO22	SPI_MOSI
3	GPIO21	SPI_CLK
4	GPIO20	SPI_MISO
5	GPIO19	DIO1

¹⁵ This pin is already occupied by the RA62A module.

¹⁶ A 499R series resistor is placed on the U0TXD pin.

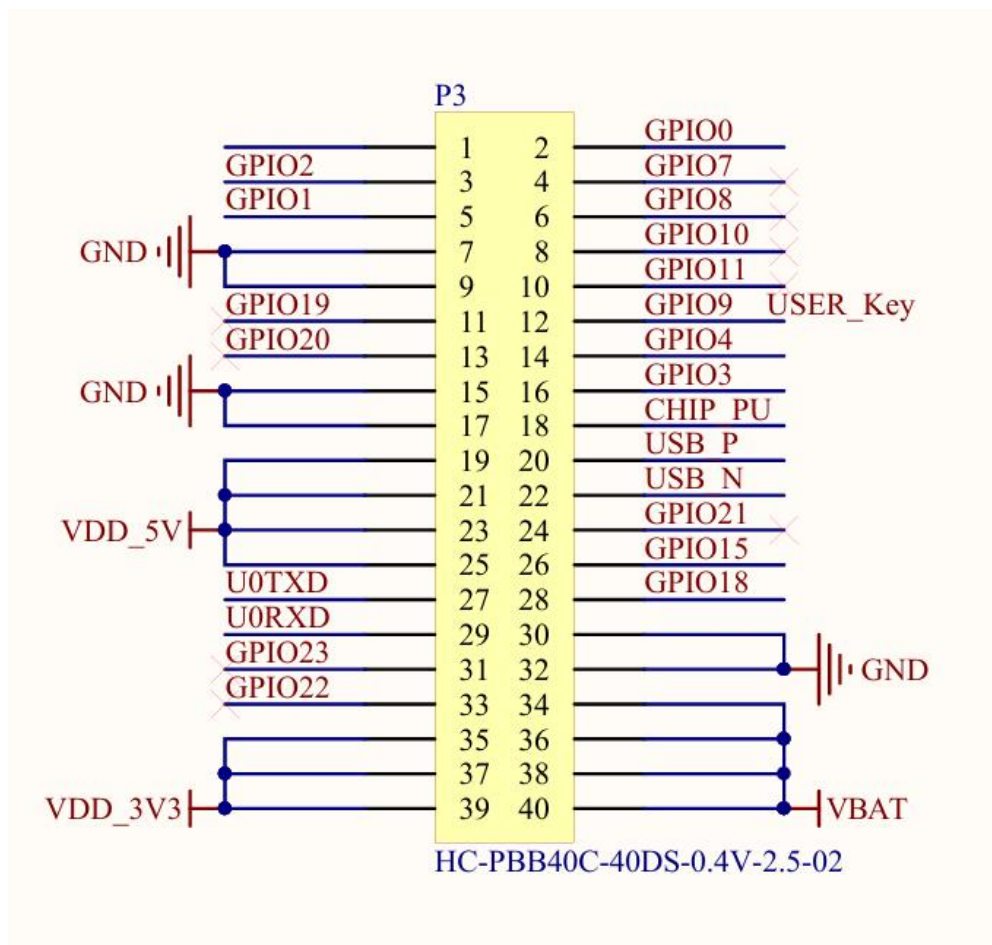
¹⁷ This pin is already occupied by the RA62A module.

¹⁸ This pin is already occupied by the RA62A module.

6	GPIO7	SELECT
7	GPIO8	RESET_N
8	GPIO10	BUSY
9	GPIO11	VEXT_LDO_Ctrl

3.4 B2B Interface Pin Definition

[BTB Connector Datasheet]



4. Electrical Characteristics

4.1 Power supply

Table 4.1: Power supply

Power Supply Mode	Minimum	Typical	Maximum	Unit
VDD_Pin	2.7	3.3	3.5	V

5V_Pin	4.2	5		V
USB-C		5		V
V_BAT	3.0	3.7	4.2	V

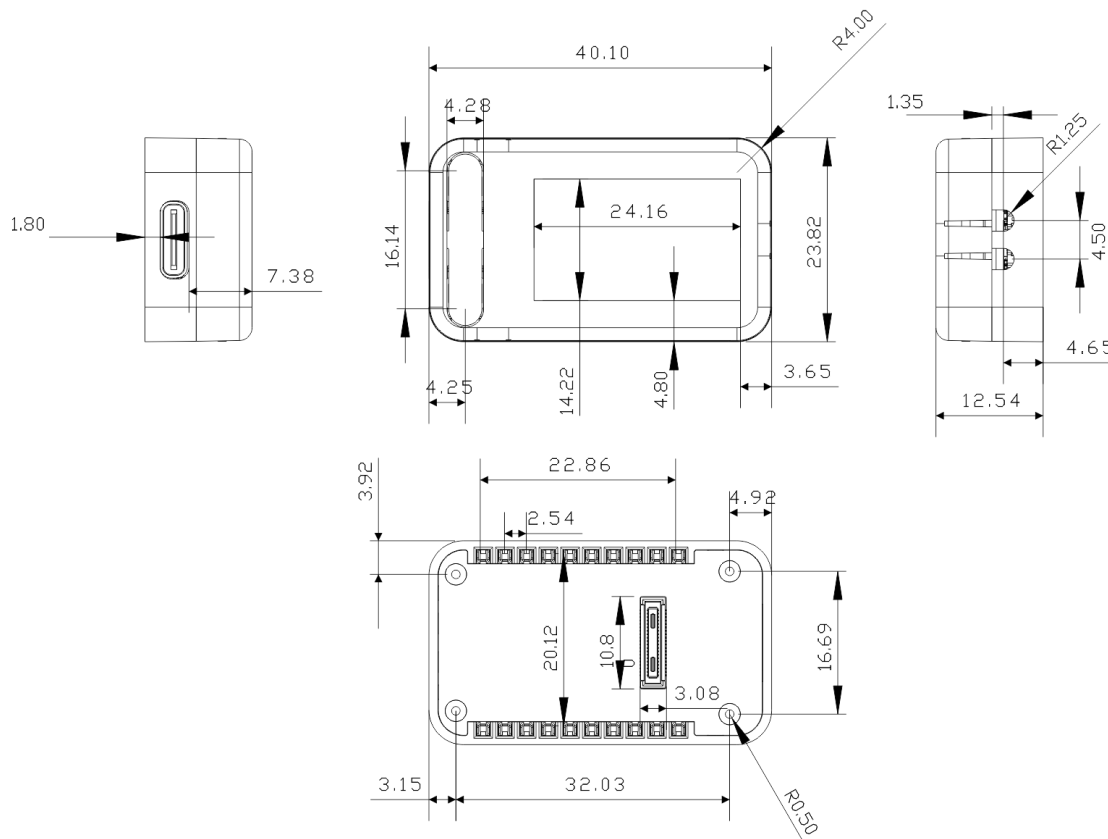
4.2 Power Consumption

Table 4.2: Power consumption

Mode	Condition@3.7V-BAT	Typical	Unit
WiFi	TX @16dBm	265	mA
	RX	90	mA
BT	TX @16dBm	255	mA
	RX	80	mA
Sleep		19	μA

5. Dimensions

Main device dimensions are listed below; see [outline drawing](#) for full data.



6. Schematic

RCC6-62 Schematic

7. SDK

The device supports all development frameworks built around the ESP32 chip, including ESP-IDF, PlatformIO, Arduino and more. At present, Arduino is the primary officially supported development framework.

7.1 Development Environment (Core Libraries & Board Manager)

- [Heltec ESP32 series boards¹⁹](#)

7.2 Expansion Library

- [Heltec ESP32 LoRa library](#)
- [RadioCore series hardware](#)

8. Docs and Resource

- [USER Manual \(Wiki\)](#)
- [Resource Download Center](#)
- [Official Product Link](#)

9. Heltec Contact Information

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<https://heltec.org>

¹⁹ Also compatible with [Espressif official ESP32 Arduino core framework](#)